

CLAIMS

What is claimed is:

1. A subscriber line interface circuit apparatus, comprising:
  - 5 a first driver for driving a downstream data signal in a non-voiceband range and a metering signal onto a subscriber line;
  - a second driver for driving a downstream voice signal in a voiceband range onto the subscriber line; and
  - 10 receiver circuitry coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the first driver and receiver circuitry reside on a same first integrated circuit die.
2. The apparatus of claim 1 further comprising:
  - 15 an upstream low pass filter providing a low pass filtered upstream signal as an upstream voice signal, wherein the upstream low pass filter resides on the first integrated circuit die.
3. The apparatus of claim 1 further comprising:
  - 15 a downstream low pass filter providing a low pass filtered downstream voice signal to the second driver, wherein the downstream low pass filter resides on a second integrated circuit die.
- 20 4. The apparatus of claim 1 wherein the voiceband range is from approximately 300 Hz to 4 kHz.
5. The apparatus of claim 1 further comprising:
  - 25 an upstream high pass filter providing a high pass filtered upstream signal as an upstream data signal, wherein the upstream high pass filter resides on the first integrated circuit die.
6. The apparatus of claim 1 further comprising:

a downstream high pass filter providing a high pass filtered downstream data signal to the second driver, wherein the downstream high pass filter resides on a second integrated circuit die.

7. The apparatus of claim 1, further comprising:

5 a metering signal cancellation circuit residing on the first integrated circuit die, wherein the metering signal cancellation circuit substantially cancels any metering signal present in the upstream voice signal.

8. The apparatus of claim 7 wherein the metering signal cancellation circuit further comprises a finite impulse response filter responsive to the

10 metering signal provided to the second driver.

9. The apparatus of claim 1 wherein the downstream data signal and the metering signal are weight coupled to the first driver wherein the weights permit varying the proportion of combination of the downstream data and metering signals.

15 10. The apparatus of claim 1 wherein a lower bound of the non-voiceband range is greater than 16 kHz.

11. The apparatus of claim 1 wherein the downstream data signal is a discrete multi-tone encoded signal.

12. A subscriber line interface circuit apparatus, comprising:

20 first driver circuitry for combining and driving a downstream data signal and a metering signal onto a subscriber line;

second driver circuitry for driving a downstream voice signal onto the subscriber line; and

25 receiver circuitry for receiving and separating an upstream signal from the subscriber line into an upstream voice signal and an upstream data signal,

wherein the first driver circuitry and the receiver circuitry reside on a same first integrated circuit die exclusive of the second driver circuitry.

13. The apparatus of claim 12 wherein the voice signal resides in a voiceband range of approximately 300 Hz to 4 kHz.

5 14. The apparatus of claim 12 wherein the upstream and downstream data signals reside in a non-voiceband range having a lower bound greater than 16 kHz.

15. The apparatus of claim 12 wherein the upstream and downstream data signals are discrete multi-tone encoded data signals.

10 16. The apparatus of claim 12 further comprising:  
an upstream low pass filter providing a low pass filtered upstream signal as an upstream voice signal, wherein the upstream low pass filter resides on the first integrated circuit die.

15 17. The apparatus of claim 12 further comprising:  
a downstream low pass filter providing a low pass filtered downstream voice signal to the second driver circuitry, wherein the downstream low pass filter resides on a second integrated circuit die.

18. The apparatus of claim 12 further comprising:  
a metering signal cancellation circuit residing on the first integrated  
20 circuit die, wherein the metering signal cancellation circuit substantially cancels any metering signal present in the upstream voice signal.

19. The apparatus of claim 18 wherein the metering signal cancellation circuit further comprises a finite impulse response filter responsive to the metering signal provided to the first driver circuitry.

20. The apparatus of claim 12 wherein the receiver circuitry further comprises a first upstream driver coupled to receive the upstream signal.
21. The apparatus of claim 20 wherein the first upstream driver is capacitor-coupled to the subscriber line.
- 5 22. The apparatus of claim 20 wherein the first upstream driver is transformer-coupled to the subscriber line.